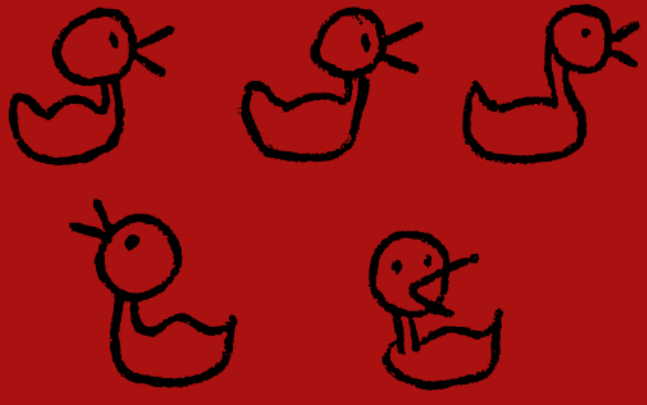
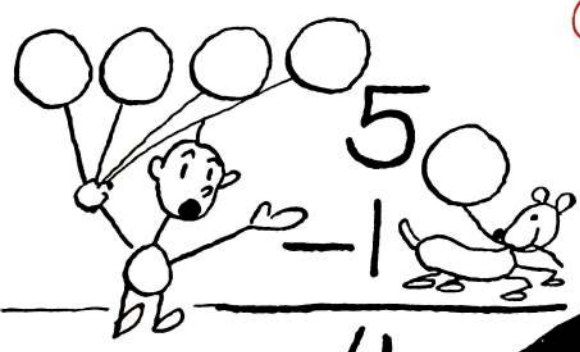
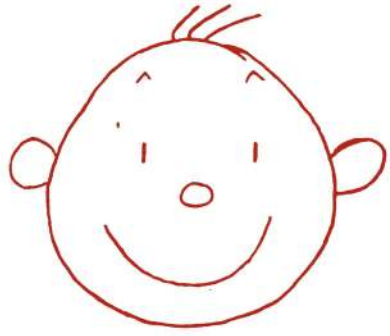
ARITHMETIC CAN BE FUN

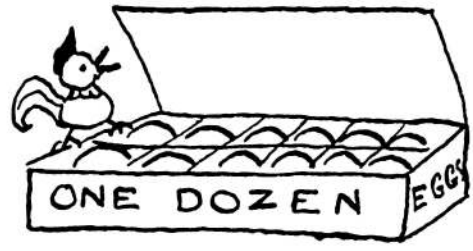


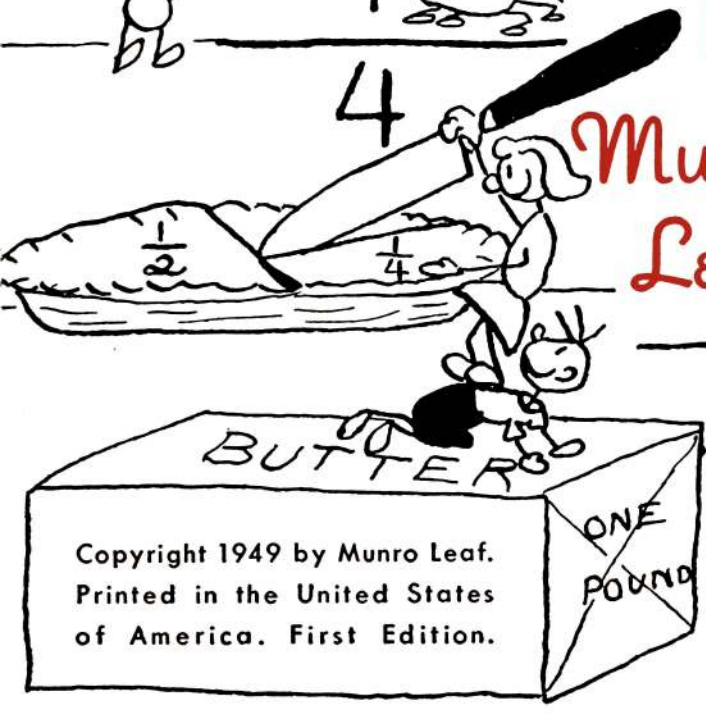
MUNRO LEAF

ARITHMETIC CAN BE FUN

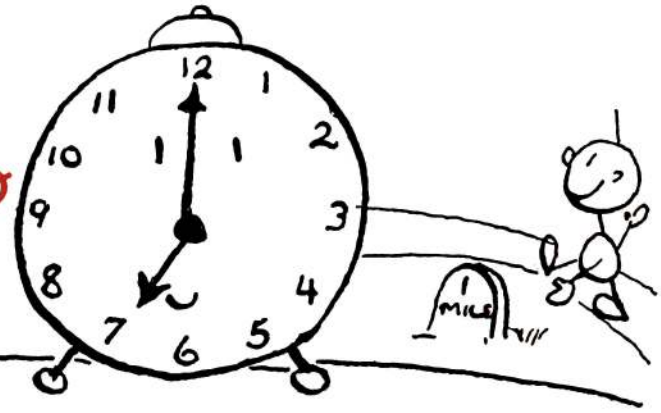


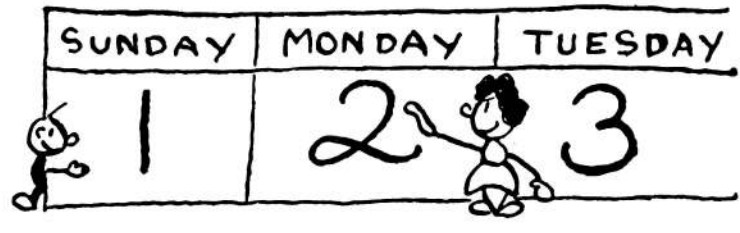






by Munro Leaf





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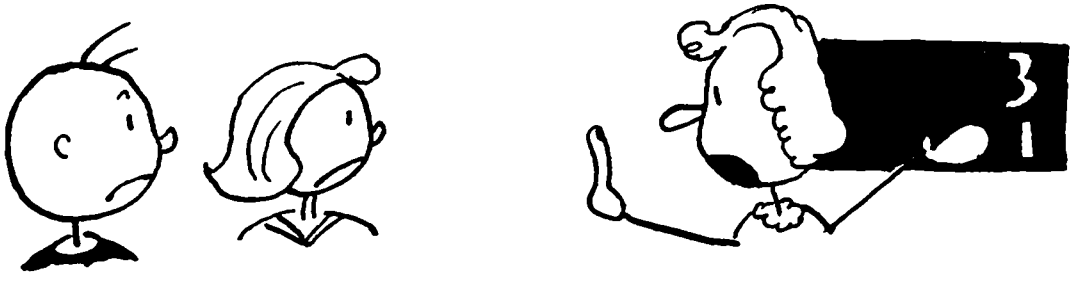
Before We Start

One of the big reasons that Arithmetic isn't much fun to so many people is that they never learn about it so that it makes sense. Somebody just tells them, "You have to learn that seven plus six is thirteen", or "nine minus five equals four". And then that somebody says, "Don't ask me why—you just remember that it is so".

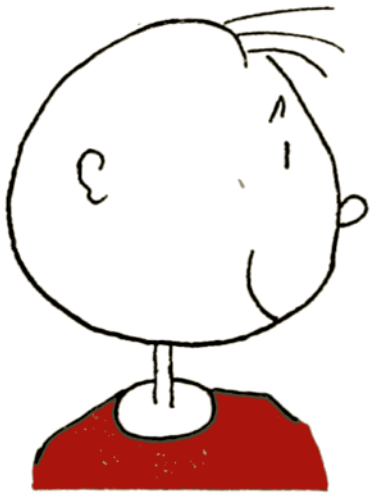


Now, if somebody told you to learn the name of the shortest river in East Africa and didn't tell you *why* you ought to know it, you probably wouldn't care what its name was—because it would never do you any good to know and just learning its name wouldn't be of any use to you ever.

But knowing about Arithmetic is useful to all of us all our lives.

Without it we wouldn't know how many we had of anything or how far any place was, or how heavy things were, or how much money we had to have to buy something, and hundreds of other things we need to know every day. Without Arithmetic we wouldn't know what time it was and we wouldn't even know how old we are.

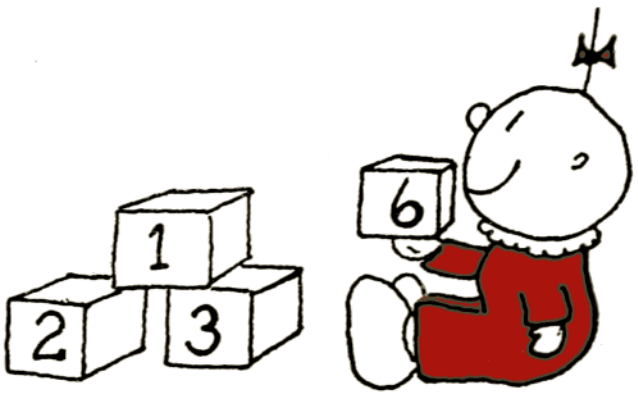
Nobody could make a good cake or build a strong bridge, make an airplane or even count how many people were going to eat lunch here today, without Arithmetic. So this book tries to tell you about Arithmetic in such a way that it *Can Be Fun.*



One of the best
things about
learning to do
Arithmetic

is that if you learn how to use
ten little pictures
the right way, you can do all the
Arithmetic that ever needs to be
done in the whole wide world.

Let's look at those ten little pictures first and learn to know their names and how to draw them.



My name is ONE.
I am a number.
I am spelled O N E .
My picture looks like this:

Draw me on a piece of paper. Start at the top and come straight down with a pencil. I can mean

a rabbit

or an apple

or a boy

or a girl

or a duck

but whatever I mean — I am alone — just a single thing all by myself —

Just ONE.

Like ONE finger . That's really what I look like just one finger straight up and down.

Draw one of anything you like and put a 1 beside it.

My name is TWO.

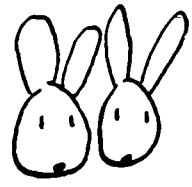
I am the next number that comes after 1.

I am spelled TWO and my picture looks like this:

2

Draw me on a piece of paper. I can mean rabbits, apples, boys, girls or ducks or anything just like one

BUT

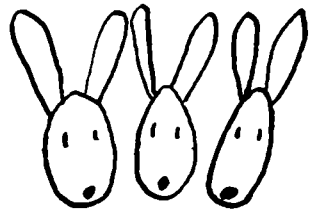
I am different from one, because when you see one rabbit and another one rabbit then you are seeing 2 rabbits. 

If you see 1 boy and another 1 boy you are seeing 2 Boys.

You draw 2 ducks on a piece of paper and put a big 2 beside them to show how many ducks are there. Now draw 2 balloons or 2 anythings like dogs or horses or houses and write a 2 beside them. Remember 1 and 1 more is 2.

My name is THREE.
I am the next number after 2, and I mean 1 more than 2, or another way to say it is that I mean 1 and 1 and still 1 more, I am spelled THREE and my picture looks like this:

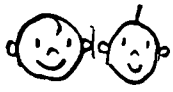
Draw me on a piece of paper. I am different from 2 because I mean 2 and 1 more, whether it's rabbits

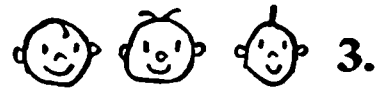


or boys

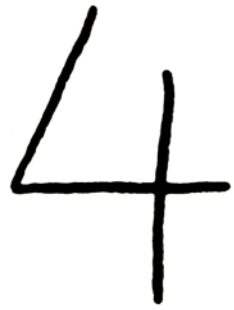
The thing to remember about 3 is that if you see

1 and 1 and 1 it's 3

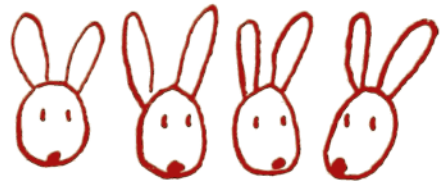
or if you see 2  and 1 it's 3

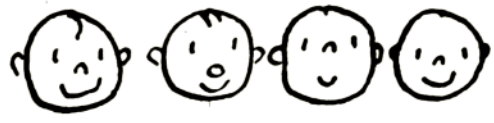
or if you see 1 and 2 it's  3.

My name is FOUR.
I am the next number after 3 and
I mean 1 and 1 and 1 and 1 or 3 and 1 more.
I am spelled FOUR and my picture looks like this:



Draw me on a piece of paper. I can mean 4 anythings:

Rabbits  4

Boys  4

You will see if you put me in different sized bunches that

4 boys

are really

1 boy and 1 boy and 1 boy and 1 boy

or 2 boys and 2 boys

or 1 boy and 3 boys

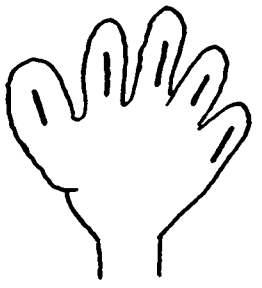
or 3 boys and 1 boy.

They all make 4 boys.
Draw bunches of 4 anythings.

My name is FIVE
and I am one of the most important numbers in Arithmetic.
I am the next number after 4 and I mean
1 and 1 and 1 and 1 and 1

So I am 4 and 1 more.

If you hold up your hand and make believe
that your fingers are all ones

like this 

You will have how many ones?

That's right, you will have me and I am spelled F I V E
and my picture looks like this:

Draw me on a piece of paper.
Then draw 5 rabbits
or
5 boys.

Now let's take away the eyes, ears, noses and mouths of the boys and just draw 5 round black dots like this

and then let's COUNT them.
That means tell their names like this:

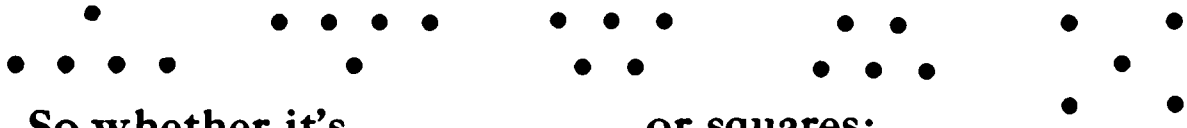
1 one 2 two 3 three 4 four 5 five

If they were like this their names would still be the same.

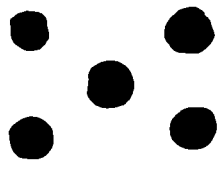
1 one
2 two
3 three
4 four
5 five

Any way you mixed up that many of anything would still be called 5.

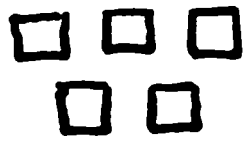
this way this way this way this way this way



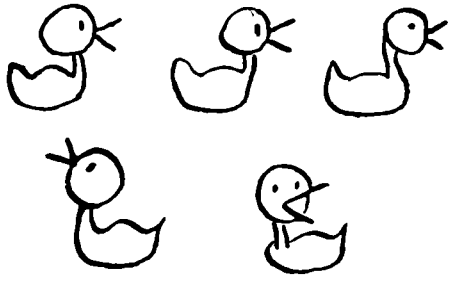
So whether it's round things:



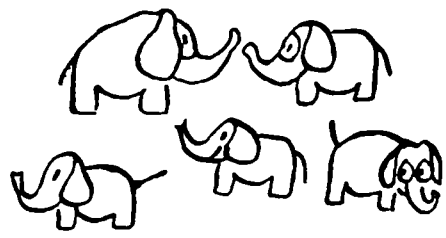
or squares:



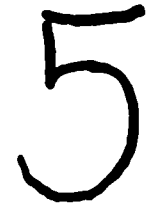
or ducks



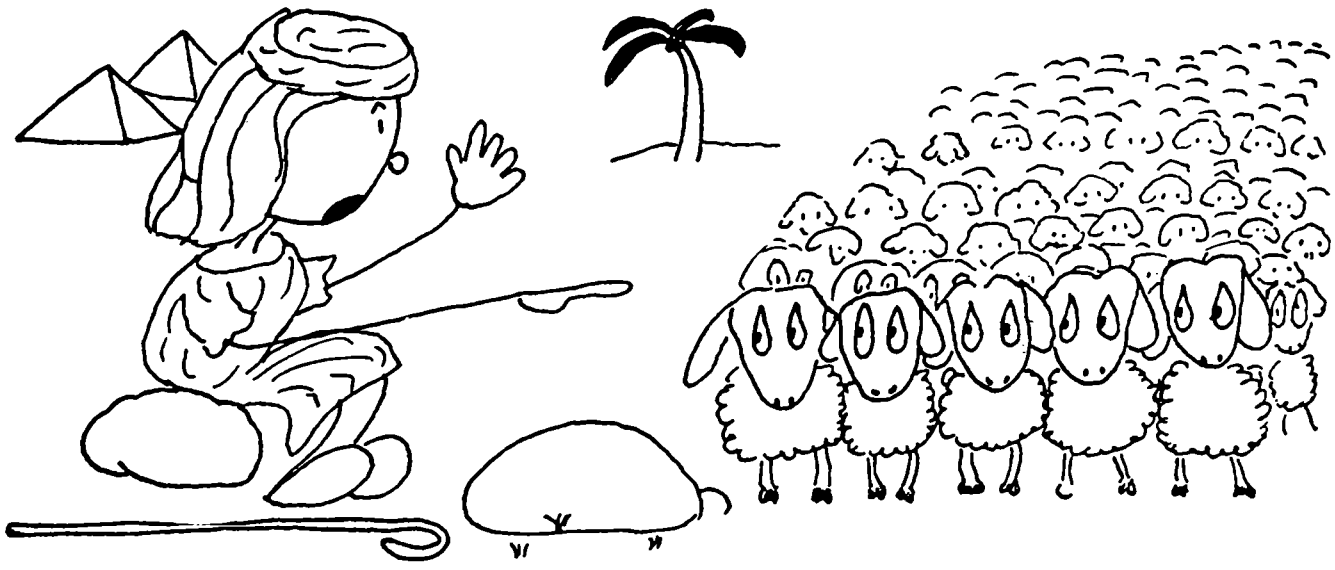
or elephants



this many is



For a long, long time 5 (FIVE) was as far as men could count. Any more than FIVE they just called "a lot," and that had people so mixed up nobody ever knew how many "a lot" was—just a few more than 5 (FIVE), or many, many more.

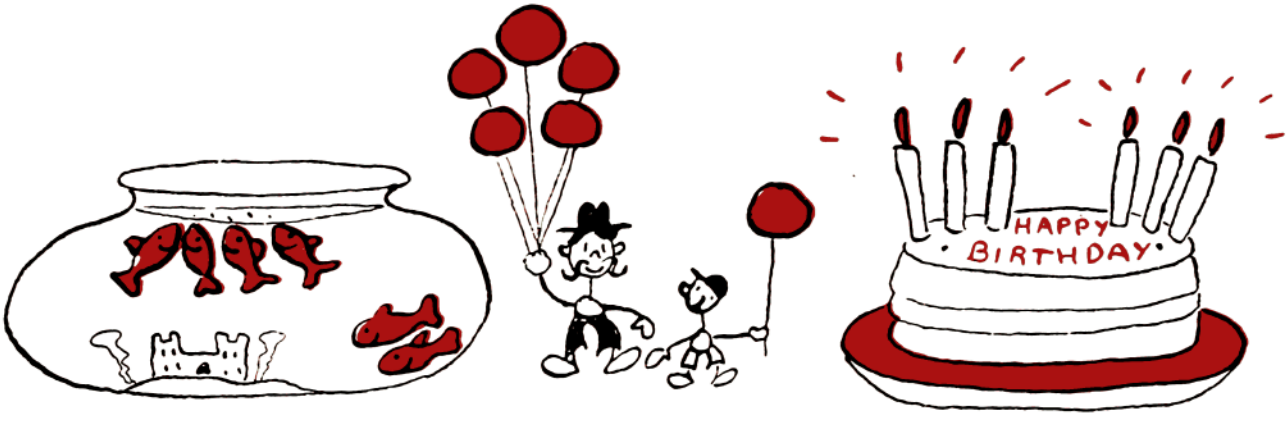


Some wise persons decided that if they could count up to 5 (FIVE) with the fingers on one hand—then they could use the fingers on the other hand and count some more. So

5 (FIVE) fingers and 1 (ONE) more finger was the next number.

My name is SIX.
I am the next number after 5 five.
I am spelled SIX and my picture looks like this:

Draw me on a piece of paper and then draw different kinds of bunches of six anythings.



You can see now that 6 six things can be

5	•	•	•	•	•	and 1	•				
1	•					and 5	•	•	•	•	•
3	•	•	•			and 3	•	•	•		
2	•	•				and 4	•	•	•	•	
4	•	•	•	•		and 2	•	•			

Can you still name all the numbers through 6?

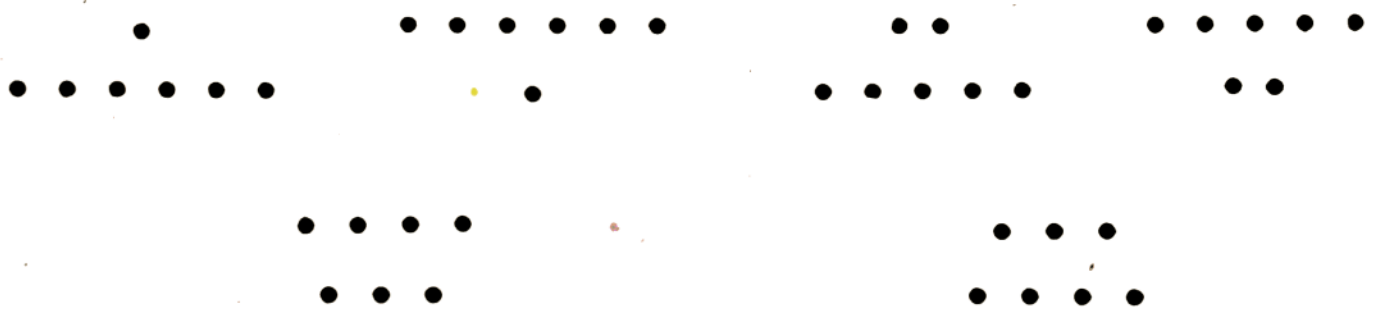
1 one 2 two 3 three 4 four 5 five 6 six.

My name is SEVEN.
Sometimes I am called a lucky number.
I am spelled SEVEN.
I am next after 6 six and my picture looks like this:

I am the number of days we have in a week.

Maybe SEVEN is called a lucky number because on the seventh day of the week, Saturday, we don't have to go to school.

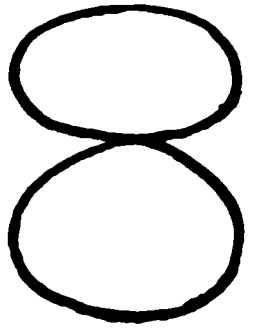
Draw 7 on a piece of paper and see how many different bunches of numbers make 7 seven:



I am next after 7 and my name is EIGHT.
I sound just like what you did to your breakfast this morning, but I am spelled differently—like this:

EIGHT

and my picture looks like two eggs for breakfast—
one on top of the other



See how many different bunches of numbers you can make out of me.

You know I am 7 • • • • • • • and 1 •

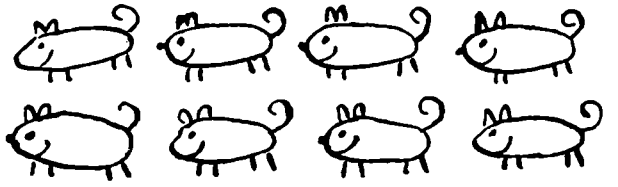
So I am also 1 • and 7 • • • • • • •

Am I 4 • • • • and 4 • • • • ?

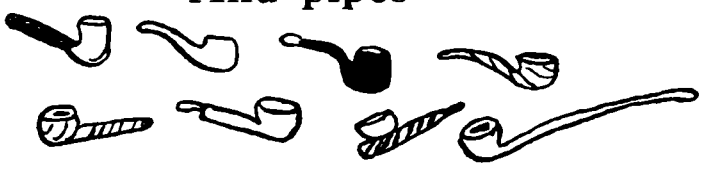
Am I 6 • • • • • • and 2 • • ?

How many others am I ?

Let's do pigs
this time—

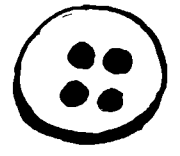


And pipes



My name is NINE
and I come after eight.
I am spelled NINE and my picture looks like a 6 upside down, like this:

It doesn't matter whether I mean goats

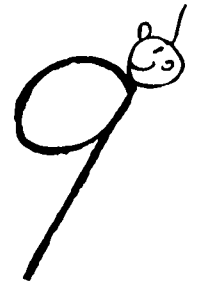
bears or buttons  I am

always one more than 8 eight and I can make more bunches of different numbers than 8 eight or 7 seven or 6 six or 5 five or 4 four or 3 three or 2 two or single lonely 1 one. All by myself I am worth 9 NINE ones

1 1 1 1 1 1 1 1 1

COUNT THEM.

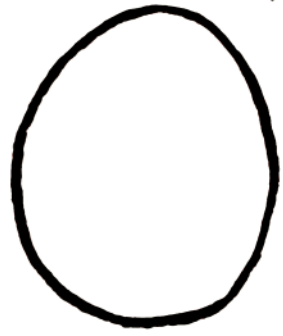
I am pretty proud to be worth so much and maybe that's why my chest sticks out so far. I am



NINE

Here I come and I am the funniest number of the whole number family. My name is ZERO.

My picture looks like this:



And I am so fat and lazy it's a wonder most people don't call me

FATSO

All by myself I mean NOTHING—

I just take up room and hold a space,

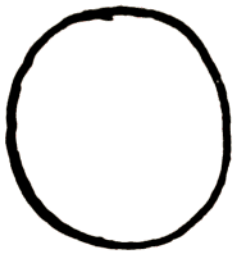
but when another number is in front

of me I am worth more than any of

the other numbers.

Let me tell you about myself:

When I am all alone



I mean NO anythings

no rabbits

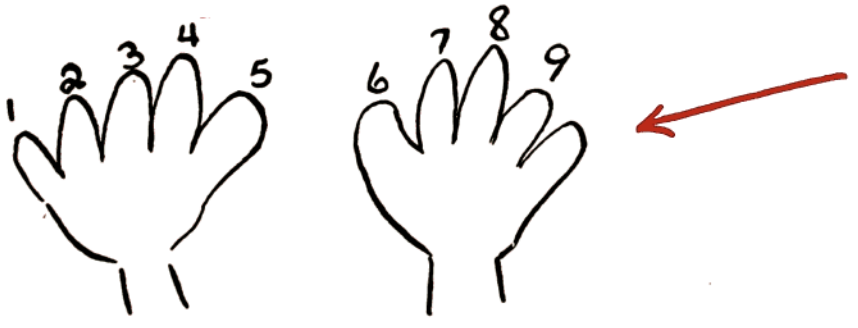
no boys

no pennies—

So if you have ZERO food to eat, you will be awfully hungry. But don't think I'm not important because I am—and this is why.

Remember when men started counting their

fingers on both hands like this



they came

to the last

finger left

and it took them years and years and more years to find a good name for me.

They said, "What shall we call this last finger we have left? And what on earth will we count with now that we have used up all our fingers?"

After a long time they decided to call the finger number that came after nine by the name of

TEN.

That was a good name and an easy one to remember—after nine comes TEN—

BUT

what would TEN's picture look like? That was a hard question because if he was a new sort of picture like 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9, who all look different from each other, then people would have to keep on thinking up a new picture for every number in the world and we would have so many of them, nobody could ever remember them all.

People thought and thought and thought. One day a wise, wise man thought about me.

He said, "Why don't we make a number that stands for nothing by himself, but can be used with all the other nine numbers to mean as many as we want." Not many people understood what he meant—so he told them carefully.

"We will make a fat round number like this

called **ZERO**

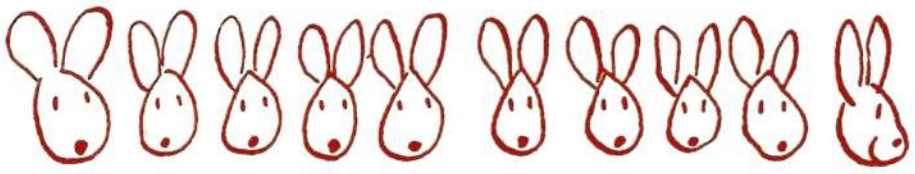
and we will put him where he can hold a space.

"When we want to show a number that means one more than nine we will let 0 ZERO hold a space and put 1 in front of ZERO to show that we have used

up all the counting fingers and are going to start over again—like this:

10

"That will be what TEN's picture looks like."
So, if we have TEN rabbits, we will write it:



10

The main thing to remember about

10 TEN

is that it is all the fingers we have and 0 ZERO holds the space we need so we can make numbers for more than ten. We can use our old friends

1 2 3 4 5 6 7 8 9 over again, and still keep on counting. Now we know the pictures of all the numbers we ever have to use

1 2 3 4 5 6 7 8 9 and 0 ZERO

When they came to the next number after 10 they saw how wise the man had been who thought about

ZERO

to hold the space in 10 ten

Because when they wanted a number that meant 1 one more than 10 ten it was easy. They just took old fatso Zero out of the space he was holding and put the 1 for 1 more than 10 where zero used to stand—like this

That number they called

ELEVEN

and it means 10 and 1 more.

10 and 2 more they called TWELVE and they put the 2 more where fatso Zero used to stand—like this:

TWELVE

3 more than 10 they called THIRTEEN 13

(it almost sounds like three and ten).

4 more than 10 they called FOURTEEN 14

5 more than 10 is FIFTEEN 15

Each number is made by taking

ZERO

out of his place in 10 and
putting the number more than ten in his place.

10 and 6 more makes SIXTEEN 16

10 and 7 more makes SEVENTEEN 17

10 and 8 more makes EIGHTEEN 18

10 and 9 more makes NINETEEN 19

and then we get old 0 Zero back again,
because 10 TEN and 10 TEN more is
2 TWO TENS 10.

The easy way to write 10 and another 10
or 2 tens is to do this:

20

That number they named

TWENTY

(it almost sounds like two tens).

Then when they wanted a number for one 1 more than 20 TWENTY they just put the 1 in Zero's place and they had

21

which is 20 and 1 more.

See if you can count from 21 to 29 like this:

TWENTY-TWO	TWENTY-THREE	TWENTY-FOUR
22	23	24

When they came to 3 TENS 10—they called it

THIRTY

30

What do you think they called 4 tens?

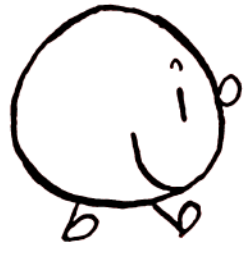
5 tens?

6 tens?

When you have learned to tell the names of these, you can count by TENS.

1 one	10 ten is	TEN	10
2 two	10 tens are	TWENTY	20
3 three		THIRTY	30
4 four		FORTY	40
5 five		FIFTY	50
6 six		SIXTY	60
7 seven		SEVENTY	70
8 eight		EIGHTY	80
9 nine		NINETY	90

Then you see old Zero again



when we get 10 ten 10 tens
and this time Zero holds
two spaces

because we write the number for ten tens

10
10
10
10
10
10
10
10
10
10
10
100

like this:

and call it ONE HUNDRED

One hundred is 1 more than 99 NINETY NINE

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Can you say all of these names now? If you can you can count to a hundred.

If you read straight down from 10 and just name the red numbers, you are counting by tens.

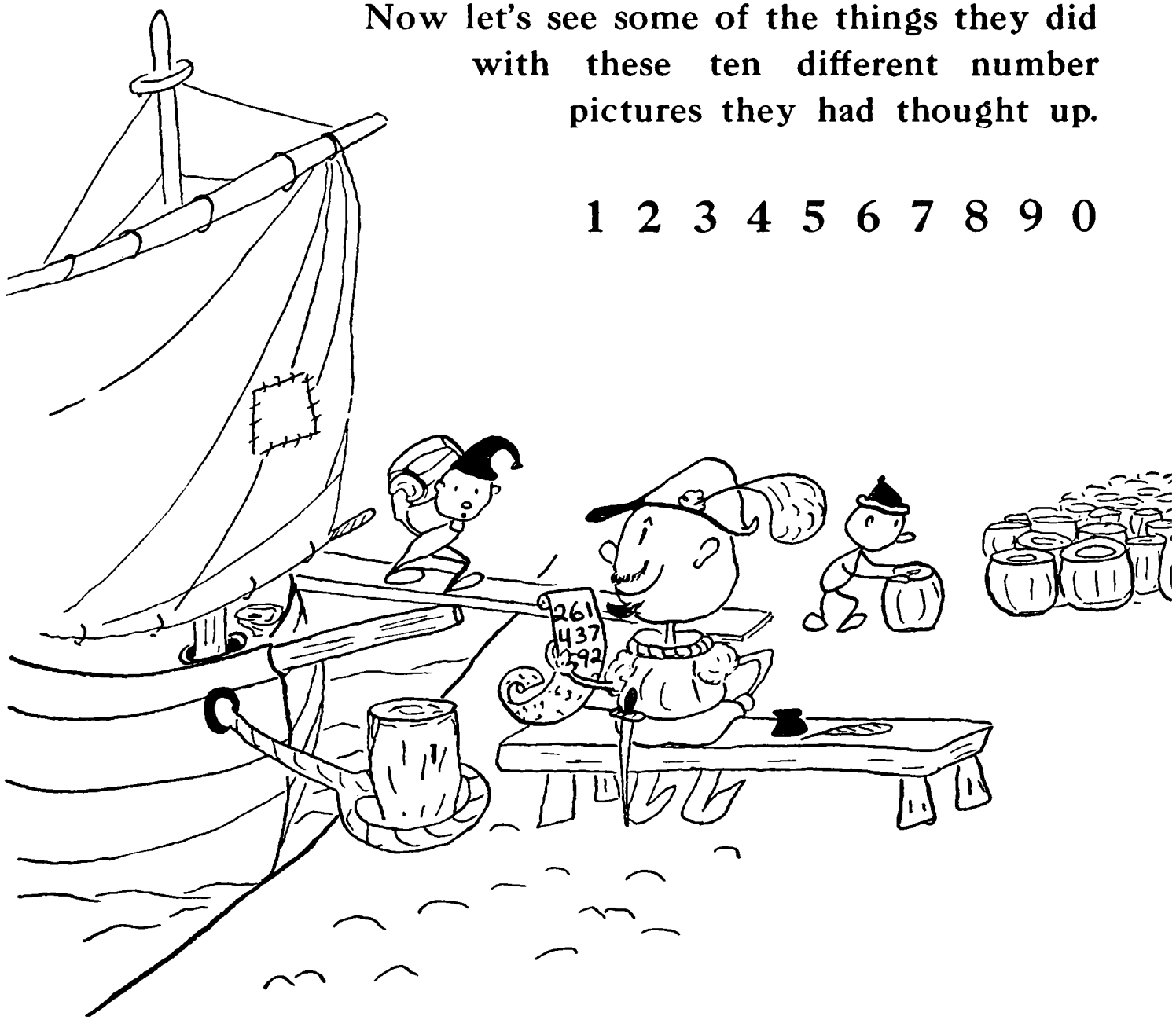
After men could count up to a hundred, then they could keep on going with one hundred and one 101. They could count forever if they wanted to, because when they came to 199 and 1 more they wrote that number this way

200

and called it TWO HUNDRED. Fatso Zeros held two spaces for them.

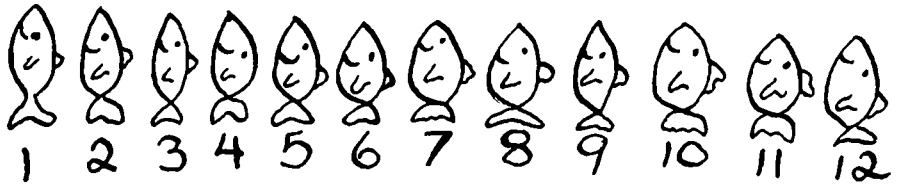
Now let's see some of the things they did with these ten different number pictures they had thought up.

1 2 3 4 5 6 7 8 9 0



When people learned how to count they could tell each other many things.

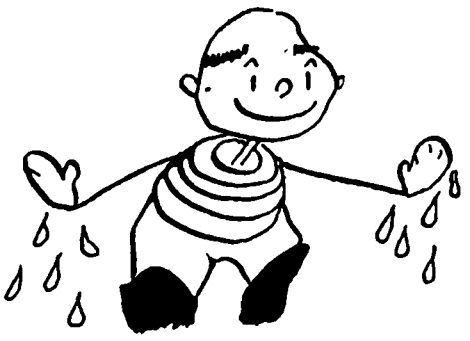
Suppose a man went fishing and when he came home his wife said, "What did you catch?" If he said, "I caught 12 fish" she knew right away that he had this many—



She didn't have to go down to his boat and see if he had caught a lot or just a few.

Then if the fisherman went into the next room to wash while she cooked supper and she shouted to him and said, "How big were they?"

What would he do? Come all the way in there and hold out his wet hands and say this big



or this big?

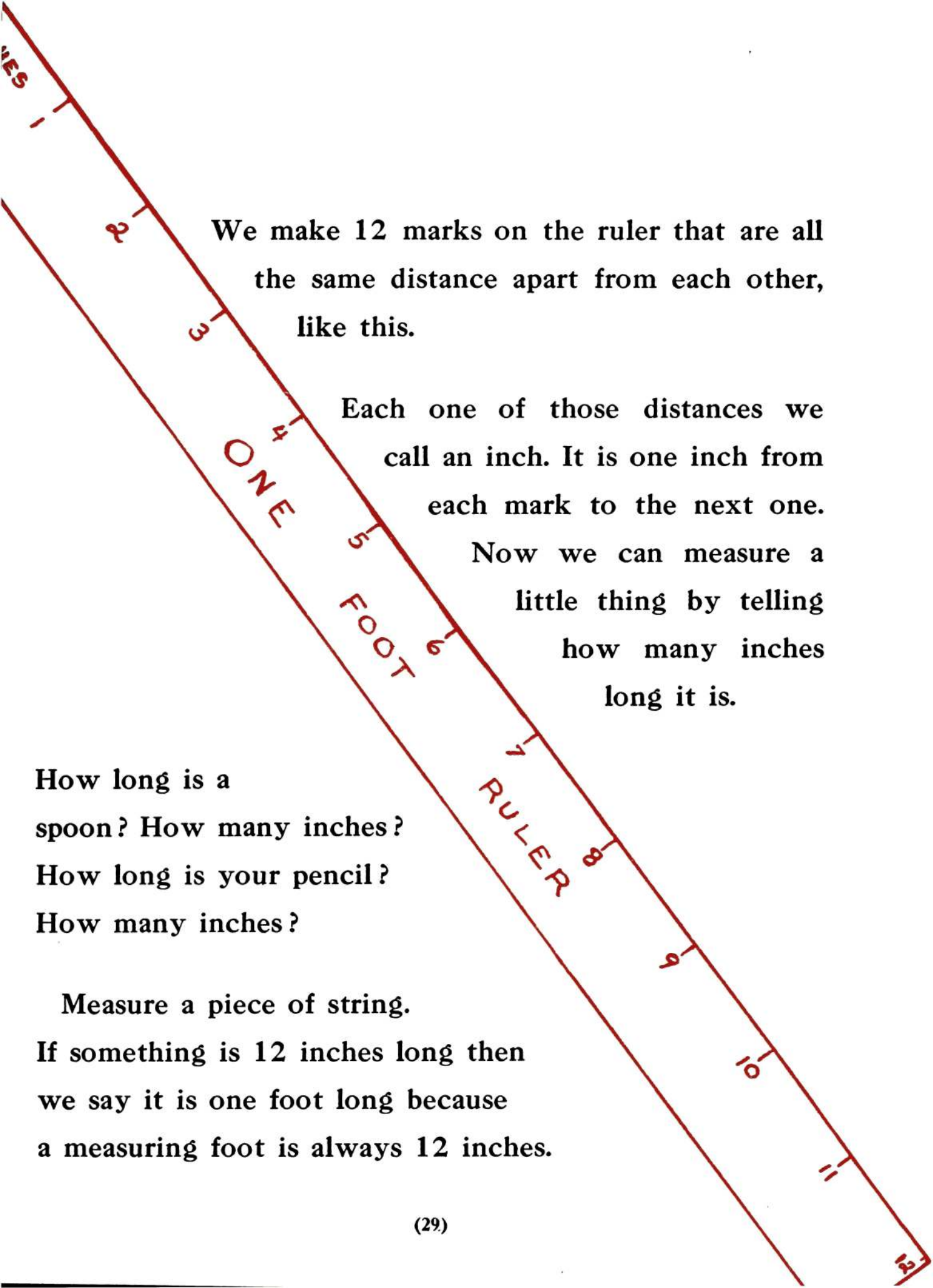
No. People had thought of a better way to tell than that and they called it

MEASURING.

Measuring is just picking certain sizes and weights and distances and parts of a day that everybody knows about and saying how *many of those* any new thing would be.

If the fisherman said to his wife, "One fish is as long as my foot," she would know how big it was right away. And if he said that another one was as long as 2 feet she'd know how big that was. Men used their feet so much to measure things that even today we make measuring sticks called rulers that are about as long as a big man's foot.

What do you think we do to measure something that isn't as long as a foot ruler?



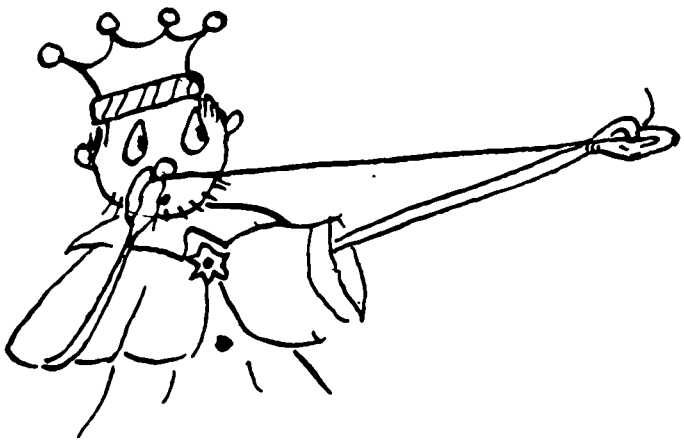
We make 12 marks on the ruler that are all the same distance apart from each other, like this.

Each one of those distances we call an inch. It is one inch from each mark to the next one. Now we can measure a little thing by telling how many inches long it is.

How long is a spoon? How many inches? How long is your pencil? How many inches?

Measure a piece of string. If something is 12 inches long then we say it is one foot long because a measuring foot is always 12 inches.

There is a funny story about a king in England who lived a long time ago and made people measure things his way.



He held one end of a piece of string on his nose and then stretched the other end out as far as he could reach with his other hand. Then he said, "You see how long this piece of string is. Well, anything that long is going to be called one YARD long."

We still measure long things like pieces of cloth by yards today.

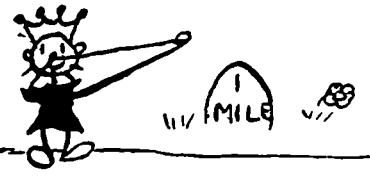
Ask your mother for a yard stick or a tape measure that is a yard long, and you will see that it is as long as 3 measuring feet.

Have your mother stretch a piece of string as far as she can reach from her nose, and see if it doesn't measure almost one yard or 3 feet.

Just like the king !

If you stretched a one yard nose string seventeen hundred and sixty times, you would have stretched a whole

MILE



The fisherman and his wife knew how to tell each other how long something was, and so do we now. We can say it is so many yards or so many feet or so many inches.

1 YARD is the same as **3 FEET**

1 FOOT is the same as **12 INCHES**

Later in this book we are going to learn to measure how heavy something is. What does it weigh?

You can't measure that by inches and feet. You measure HOW HEAVY with

POUNDS and **OUNCES.**

And we learn to measure how much of the whole day a part of it is. How long did it take you to eat your supper?

That is TIME. You can't measure TIME in inches or pounds. That we measure in

HOURS—MINUTES—SECONDS

and

DAYS—YEARS

And how much milk did you drink yesterday? You don't measure that in inches or pounds, or hours and minutes. That we measure in

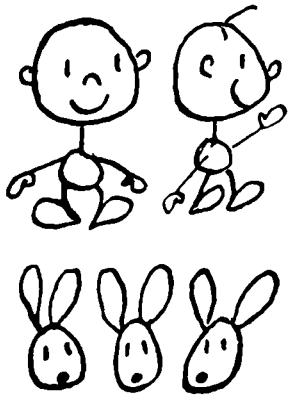
GALLONS—QUARTS—PINTS

Before we measure those though, we are going to learn two games about HOW MANY. They are called

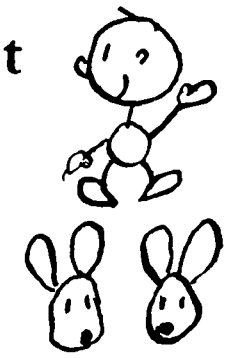
ADDITION and SUBTRACTION

and in them we learn about

MORE and LESS.

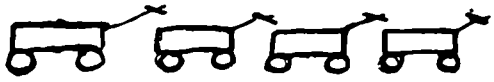


We already know that



2 is more than 1

3 is more than 2



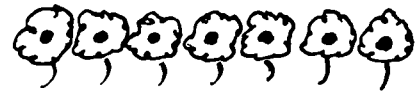
4 is more than 3

5 is more than 4

6 is more than 5

7 is more than 6

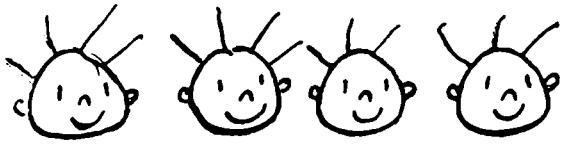
8 is more than 7



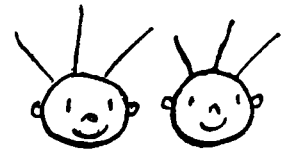
9 is more than 8

10 is more than 9

We found that out when we learned to count.
So it's just as easy to see that



4 is more than 2



6 is more than 3

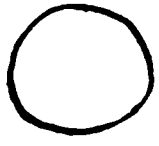
The next thing we want to know is How many more one number is than another. To find that out we play an ARITHMETIC game that is called

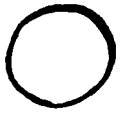
ADDING

and this is how we play it!

If I didn't have any dogs at all—not even one—then I might look like this

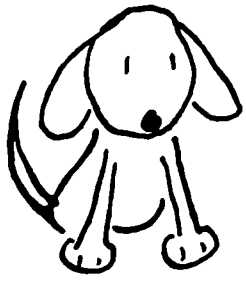
and people would say he has no dogs or they could say he has

Zero  dogs because

Zero  means no dogs or *no* anything.

Then if somebody gave me

1 one dog



I would have

just one dog

because and 1 makes only 1.

But if I had one dog

1

and somebody gave me another dog

1

Then I would have

dogs

2

BECAUSE 1 AND 1 MAKES 2

When we put 1 and 1 together we ADD them. **PUT TOGETHER** means **ADD**, and in Arithmetic we draw a little sign called PLUS like this + when we mean to ADD or put together, this way—

makes

1 1 2

and instead of always having to say "*makes*" we use another sign called EQUALS that means "makes" and that looks like this:

$$1 + 1 = 2$$

1 + 1

= 2

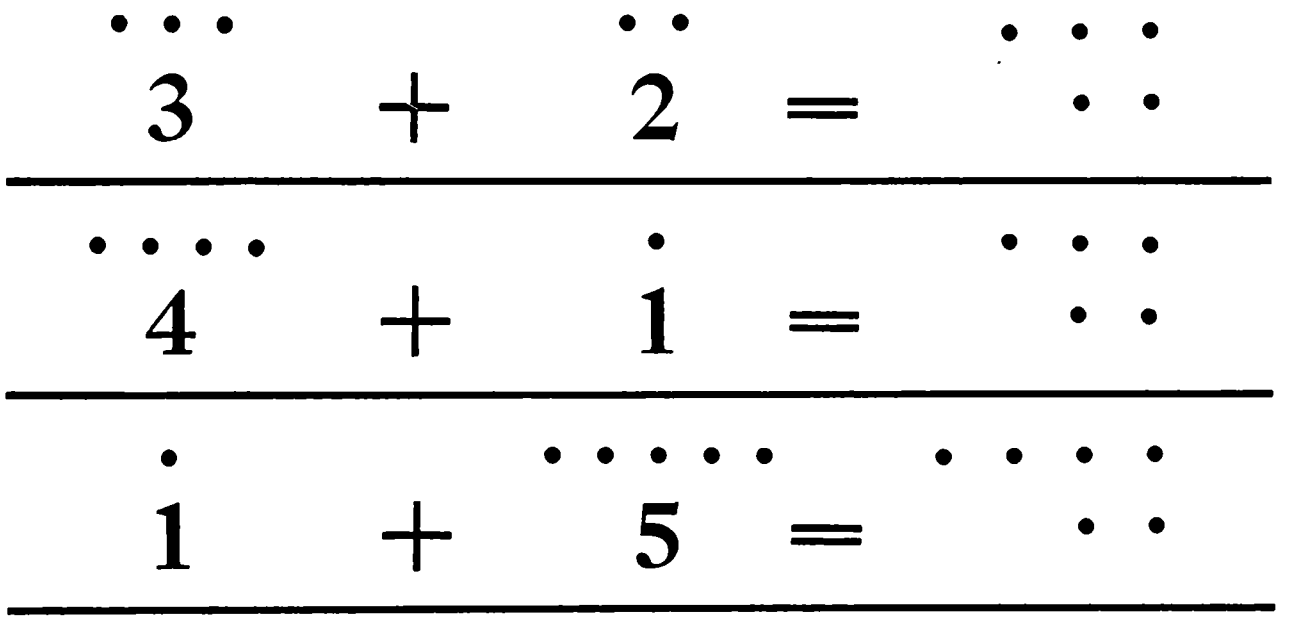
How many do you think

=

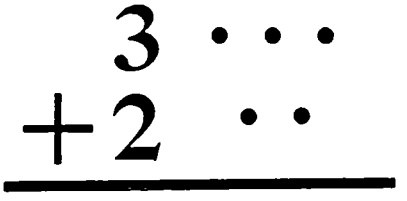
1 + 2 makes?

HOW MANY?—COUNT THE DOGS.

How many do you think these numbers make?

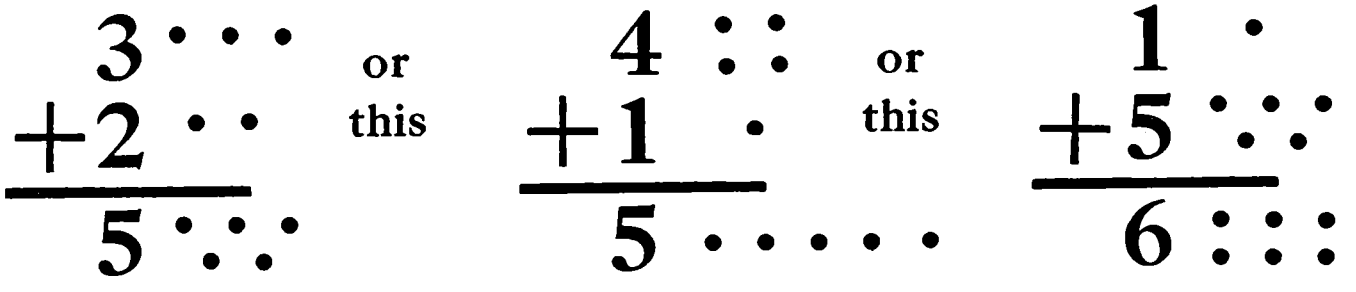


A better way to ADD or put together is this way

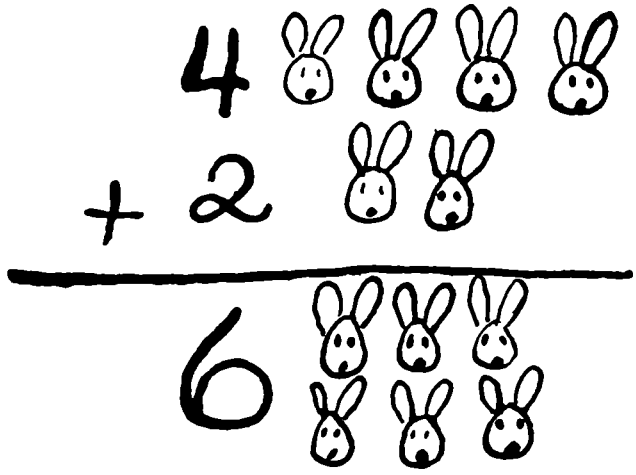


You write a number under the other and put the ADD sign + in front of the bottom number.

Then you draw a line under the bottom number and put how much they make together below that line, like this:

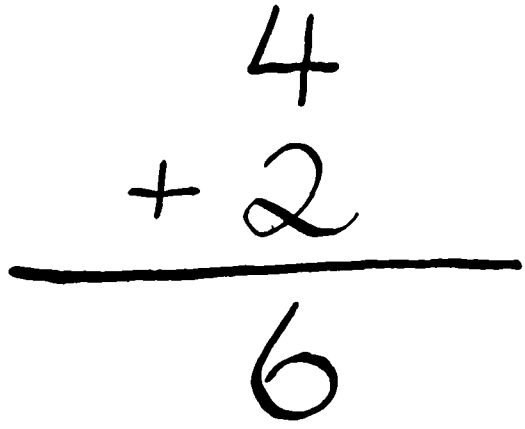


After you practice with adding like this:



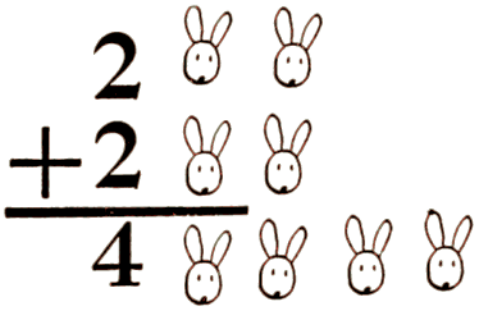
you can leave out the pictures of things like dogs or rabbits or dots and just draw the pictures of the numbers alone like this:

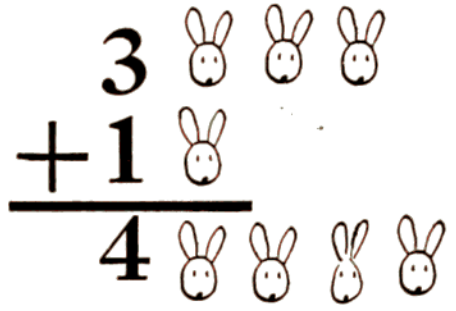
because 4 or 2 or 6 can mean anything we want them to—
sheep—cats—mice—days—miles
—feet—ham sandwiches
—anything.

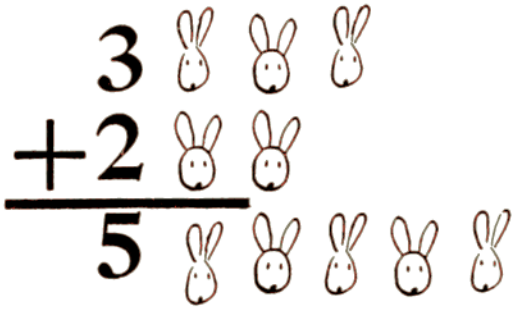


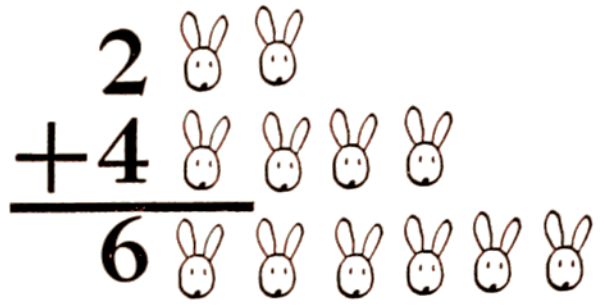
You know that 4 is this many • • • • and you know that 2 is this many • • but after you practice you won't have to count all the little things every time to make 6 • • • • • • You will just remember that

$$\begin{array}{r} 4 \\ +2 \\ \hline 6 \end{array}$$

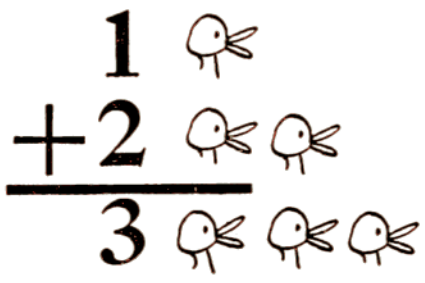


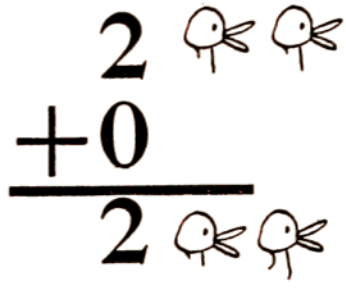






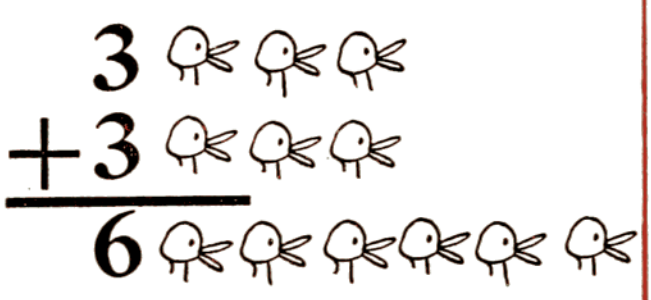
SEE HOW MANY OF THESE YOU CAN REMEMBER. PRACTICE ON PIECES OF PAPER—WITH PICTURES AND WITHOUT.

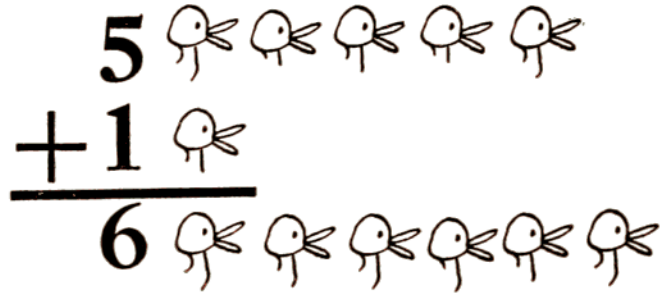




none at all

is still just two





What you now know is that

1 anything and 2 more anythings
make 3 anythings.

And you know that 4 anythings
and
+2 more anythings
make 6 anythings.

DO YOU KNOW ALL OF THESE?

0	0	0	0	0	0	0
+0	+1	+2	+3	+4	+5	+6
0	1	2	3	4	5	6

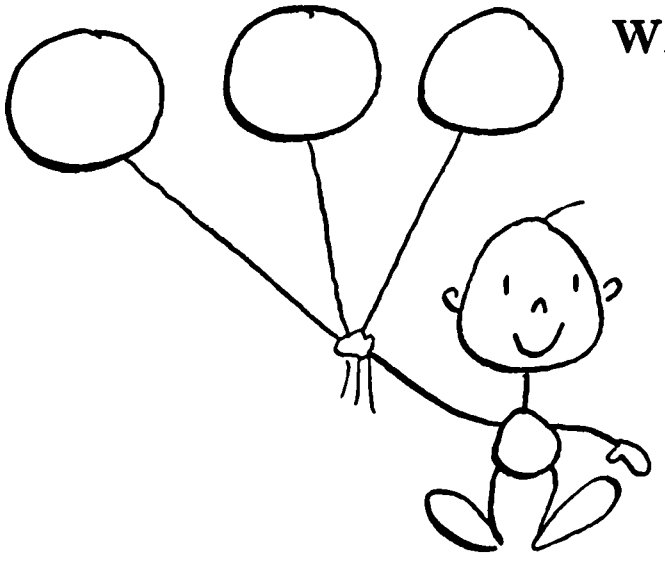
1	1	1	1	1
+1	+2	+3	+4	+5
2	3	4	5	6

2	2	2	3
+2	+3	+4	+3
4	5	6	6

That is a lot to know about making MORE or what we call ADDITION.

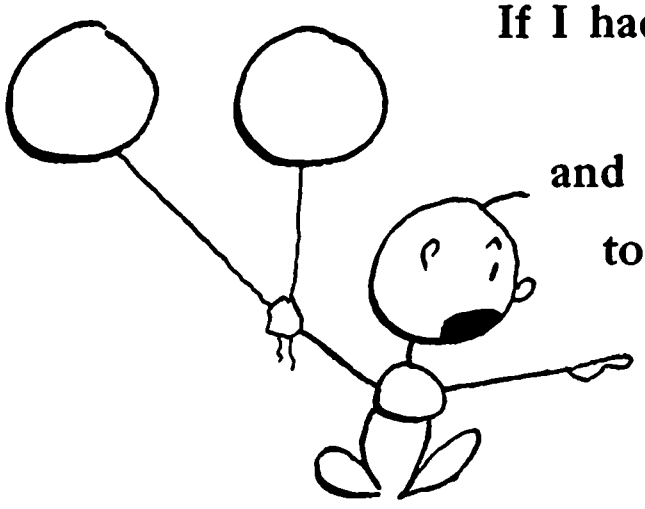
Now let's learn about making LESS.

That is what we call SUBTRACTION.

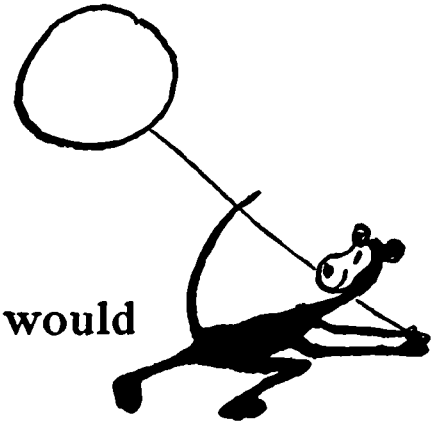


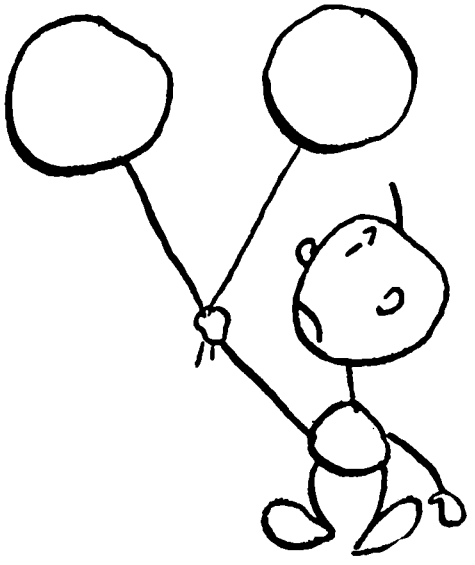
When we ADD to make MORE
we put numbers together
BUT
when we SUBTRACT to
make LESS,
WE TAKE AWAY
numbers from other numbers.

If I had 3 balloons



and a monkey
took one away
from me
How many would
I have left?





RIGHT.

I would have only

2.

3 take away 1 equals = 2 makes

Instead of always saying

"take away"

in Arithmetic we draw a sign like this —

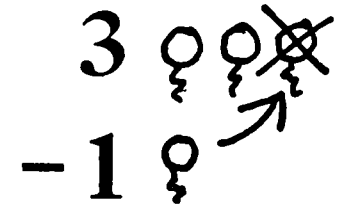
It is called MINUS

and that means "take away"

So if I write

3 − 1 = 2

or better yet



3
−1
2

You know it means

If you have

3

and then take away − 1 of them

then you have only 2 left

If I had **4** kittens

and the man next door took

2

of them

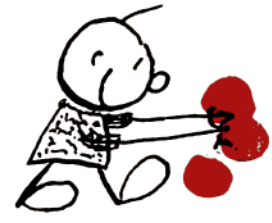
away

How many would I have left?

$$\begin{array}{r} 4 \\ -2 \\ \hline 2 \end{array}$$

is Right.

Or if you had **6** balls on your Christmas tree and your baby brother took away **3** of them

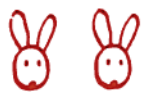
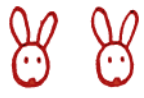


How many would be left?

$$\begin{array}{r} 6 \\ -3 \\ \hline 3 \end{array}$$

Get some marbles or cards or blocks and practice "take aways." How many do you have to start with? How many do you take away? How many do you have left?

It is fun to play with peanuts because when you "take away" the peanuts you can eat them!

5 −3 2	6 −3 3
4 −2  2 	5 −1 4
2 −2 0	6 −0 6

HOW MANY OF THESE CAN YOU REMEMBER? PRACTICE.

0	1	2	3	4	5	6
-0	-0	-0	-0	-0	-0	-0
0	1	2	3	4	5	6
1	2	3	4	5	6	7
-1	-1	-1	-1	-1	-1	-1
0	1	2	3	4	5	6
2	3	4	5	6	7	8
-2	-2	-2	-2	-2	-2	-2
0	1	2	3	4	5	6
3	4	5	6	7	8	9
-3	-3	-3	-3	-3	-3	-3
0	1	2	3	4	5	6
4	5	6	7	8	9	
-4	-4	-4	-4	-4	-4	
0	1	2	3	4	5	
5	6	7	8	9		
-5	-5	-5	-5	-5		
0	1	2	3	4		
6	7	8	9			
-6	-6	-6	-6			
0	1	2	3			

On this page we have some examples to practice with, but you have to watch out to see if you are supposed to ADD when the sign is + PLUS or SUBTRACT when the sign is – MINUS.

BE CAREFUL

4	4	3	3
+1	-2	+3	-3
5	2	6	0
8	6	0	7
-3	-1	+6	-3
5	5	6	4
4	3	5	0
-3	-0	+1	-0
1	3	6	0

If we learn to count by Fives and know what ONE HALF and ONE QUARTER mean, then it's easy to tell what our money is worth. SO LET'S FIND OUT

Remember the box we made to count TENS? Here is another one with all the FIVE numbers red.

Read the red numbers out loud as you go across the lines

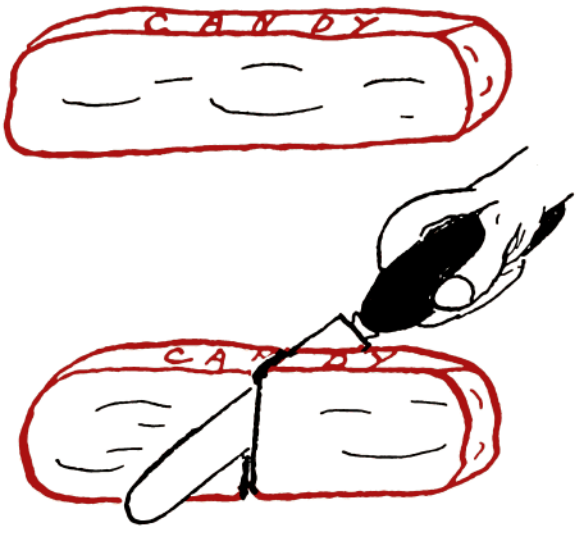
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Some of the FIVE numbers are TEN numbers too, because 5 and 5 make 10—So we read 5-10-15-20-25-30-35-40-45-50-55-60-65-70-75-80-85-90-95-100.

That is counting by FIVES. Can you do it?

What is ONE-HALF?

If you had a candy bar and you wanted to give somebody half of it—what would you do?



You would cut it or break it into 2 parts that were just exactly as big as each other. Each of those parts would be called ONE-HALF.

We draw a number picture to mean One-Half of anything, like this:

$\frac{1}{2}$

The ONE up top means it's ONE part.
The TWO underneath means something was separated into TWO PARTS.

IF YOU HAD SIX PUMPKINS

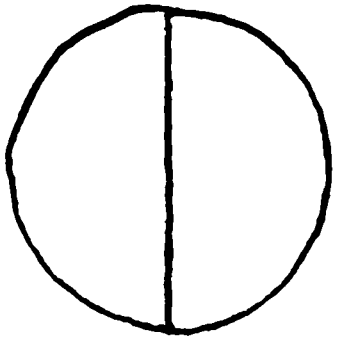
and wanted to give me one half of them—
you would separate the pumpkins into TWO piles so that each pile had just as many in it as the other one, like this:

Each half would be 3 pumpkins because 3 is one-half $\frac{1}{2}$ of 6.

What is ONE QUARTER?

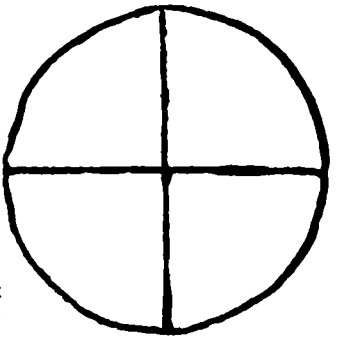
The word QUARTER comes from a language people used to speak a long time ago called Latin. QUARTO meant 4, so quarter now means ONE FOURTH or one of four parts all the same size. That is something like ONE HALF only it is just ONE HALF of ONE HALF, because if you cut ONE HALF in 2 parts each part is ONE FOURTH or ONE QUARTER.

If you had one pie for four people, how would you separate it into even parts?

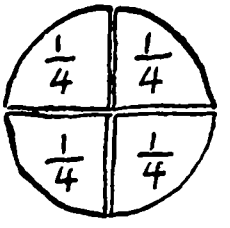


First you would cut it into 2 parts or halves.

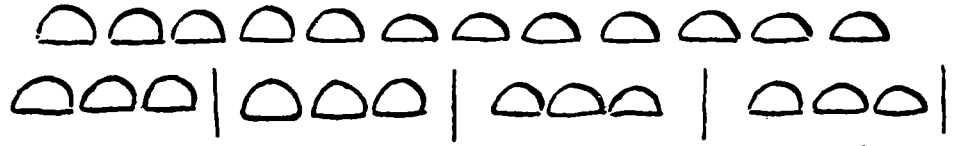
Then cut each half into 2 parts.



Each one of these four parts would be called ONE FOURTH $\frac{1}{4}$ or ONE QUARTER of the whole pie.



Now let's take 12 Gum Drops and separate them into 4 even piles for 4 people:



1 Pile 2 Pile 3 Pile 4 Pile

Each pile is ONE FOURTH $\frac{1}{4}$ of the whole 12 or ONE QUARTER.

Now let's try counting money and see if we can see WHY we have different kinds of coins and why some of them are worth more than the others.

We have a CENT

Most of the time we call a CENT a PENNY.

We have a FIVE-CENT PIECE

that we call a NICKEL most of the time

and

We have a TEN-CENT PIECE

that we call a DIME most of the time

and we have

a TWENTY-FIVE CENT PIECE

called a QUARTER

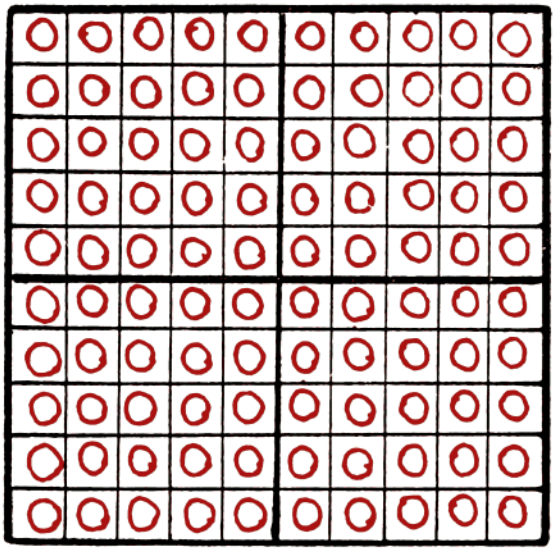
a FIFTY-CENT PIECE

called a HALF DOLLAR

a HUNDRED-CENT PIECE

called a DOLLAR

We have paper dollars too, that are worth just as much as silver ones but aren't so heavy.



If we had a box with 100 cents or pennies in it, it would be worth ONE DOLLAR, because 100 pennies will buy as much as ONE Silver or Paper Dollar.

How many pennies are in half the box? COUNT THEM. So how many pennies is ONE-HALF of a DOLLAR worth?.

How many pennies are in one-fourth or one-quarter of the box? COUNT THEM. So how many pennies is one QUARTER DOLLAR worth?

ONE NICKEL

is worth

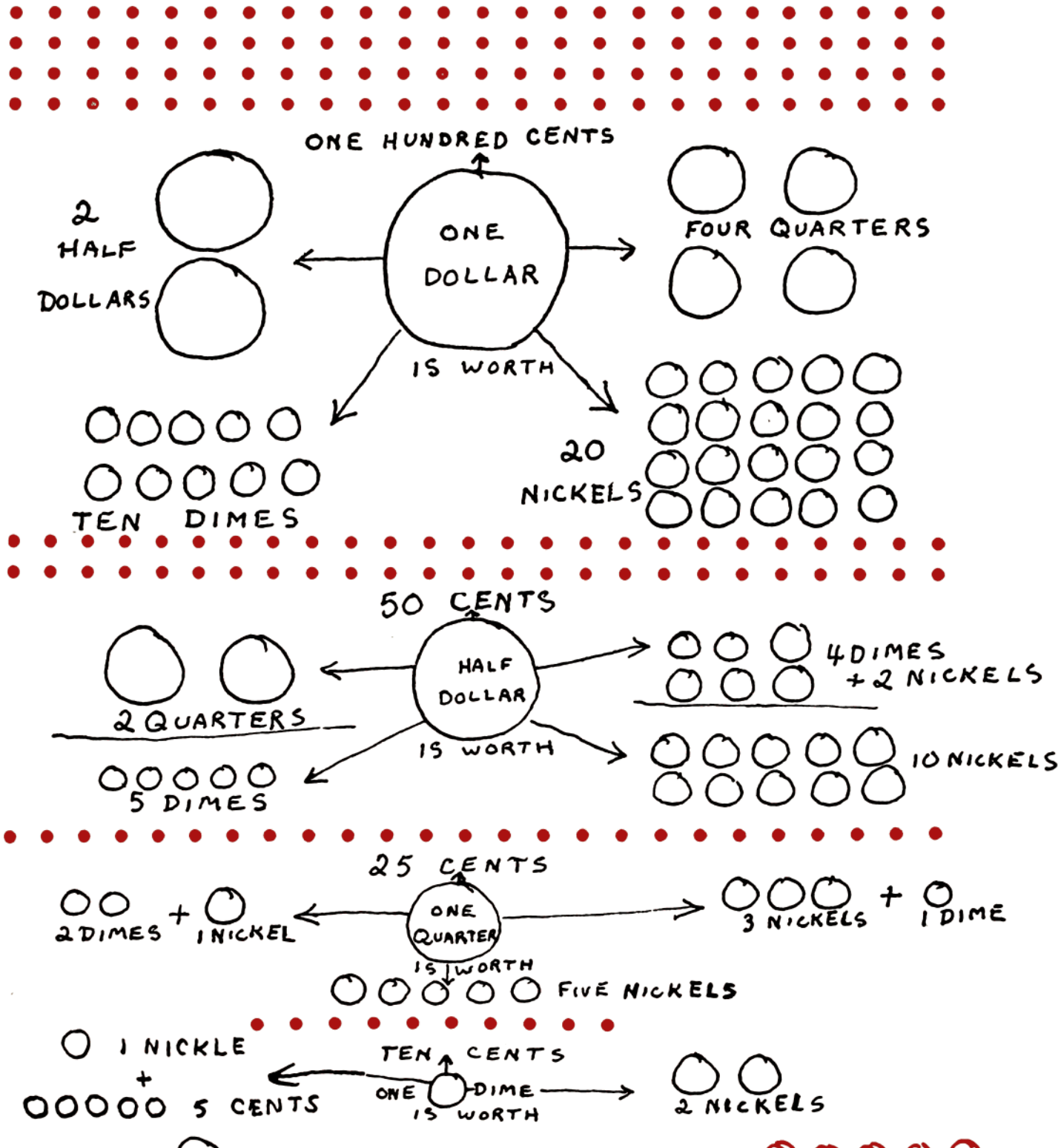
FIVE CENT PIECE

ONE DIME

is worth

TEN CENT PIECE

This will help you remember.

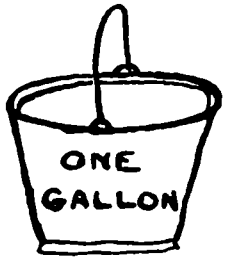


1 NICKEL is worth 5 CENTS

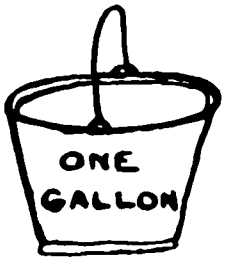
Quarto for 4 again.

Another way that we use quarters of something is when we measure milk, water, gasoline, or other liquids that pour, like syrup or vinegar or ginger ale.

One QUART is really a nickname for ONE FOURTH or ONE QUARTER of a gallon.



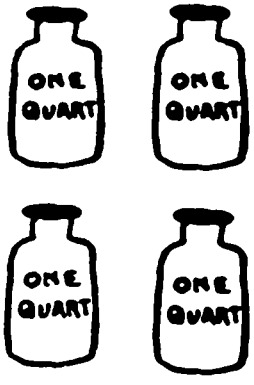
The Government tells us that all gallon holders—jugs, or bottles or cans have to be a certain size, so when you buy a gallon of anything you always get the same amount.



Every GALLON will fill

4

QUART bottles.

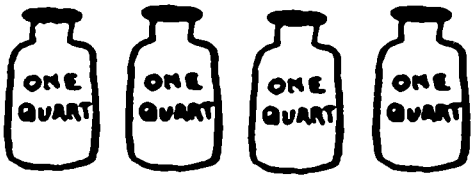


One half of a QUART is what we call a PINT.
So to measure liquids just remember

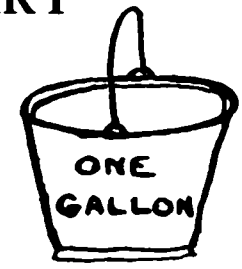
2 PINTS make

1 QUART

and



4 QUARTS make
1 GALLON



TRY IT WITH WATER—IT'S FUN

Many things that we buy that don't pour like liquids, we measure by How much they weigh.

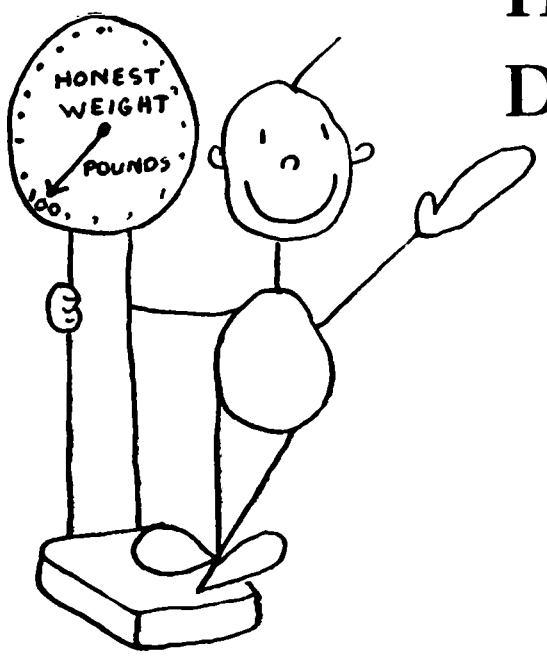
That means—How heavy they are.

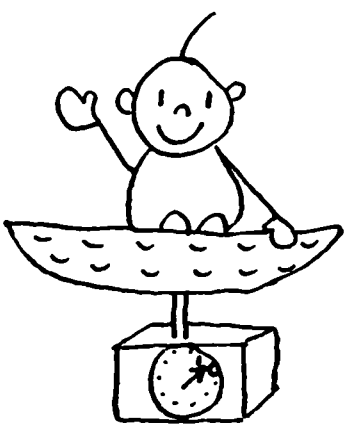
Our Government has a special piece of metal in Washington, and what it weighs is called ONE POUND. So, whenever you get one pound of anything it has to be just as heavy as that Government piece of metal or you are not getting enough.

If you cut a pound of butter into 16 even pieces each of those little pieces would be one OUNCE. Because 16 OUNCES are as heavy as one POUND. And if you bought something as heavy as a TON of coal—that would really be heavy.

ONE TON of anything weighs 2,000 POUNDS. That is really 20 bags full when each bag full weighs 100 pounds.

HOW MUCH DO YOU WEIGH?





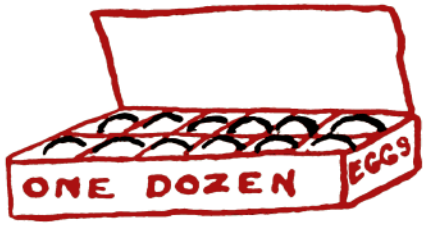
Eggs, bananas, oranges and some other things we buy by the

DOZEN

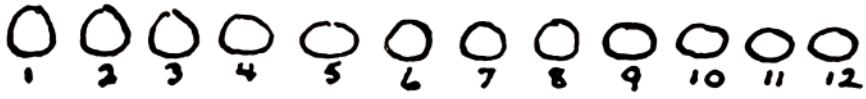
A DOZEN just means 12 twelve. So a

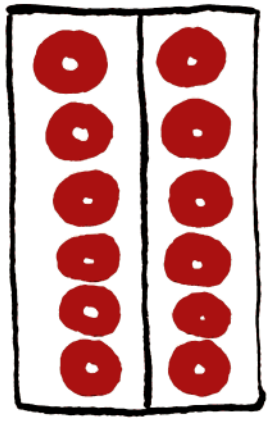
DOZEN

EGGS



is





How many are in

ONE HALF OF A DOZEN
DOUGHNUTS?

6 is RIGHT—because 12 makes 2 even halves or piles of 6 each.

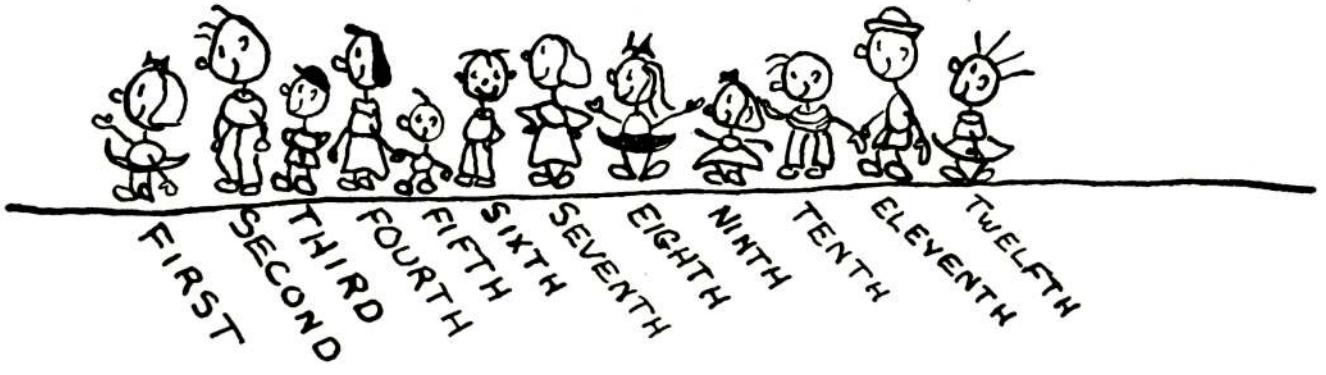
People have always used the number 12 for a lot of things.
Remember we have
12 INCHES in a FOOT.
12 ANYTHINGS in a DOZEN
and we have
12 MONTHS in a YEAR.

Here are the MONTH names and numbers

1 JANUARY	is the FIRST
2 FEBRUARY	is the SECOND
3 MARCH	is the THIRD
4 APRIL	is the FOURTH
5 MAY	is the FIFTH
6 JUNE	is the SIXTH
7 JULY	is the SEVENTH
8 AUGUST	is the EIGHTH
9 SEPTEMBER	is the NINTH
10 OCTOBER	is the TENTH
11 NOVEMBER	is the ELEVENTH
12 DECEMBER	is the TWELFTH

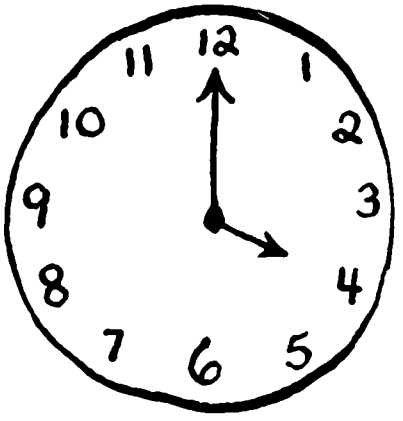
These are number names that mean what place in a line anything holds.

If boys and girls stood in line, we would say—
this one is



Did you know that there are 12 numbers on a clock?

If you stand in front of a clock it looks something like this:



This clock says

that the time is

4 o'clock

and if you pay attention to see what he is saying, you can tell what time it is.

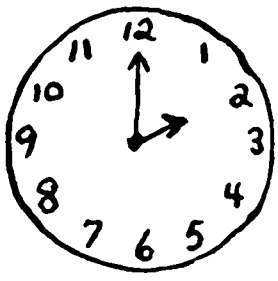
The clock talks with his hands and he keeps them on his face. He points with one short hand near a number to tell you what HOUR he is talking about.

With his long hand he points to another number to tell you how many MINUTES it is after the hour or how many minutes we have to wait before the next hour.

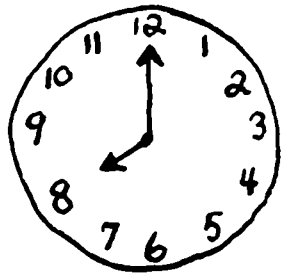
But when his long hand is pointing right straight up to 12, then it is exactly what HOUR the short hand says it is. Not any minutes after—or any minutes before.

Then we say it is that HOUR O'CLOCK
(O'CLOCK just means "of the clock").

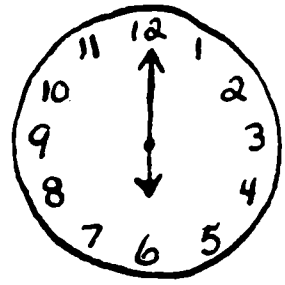
We say it is:



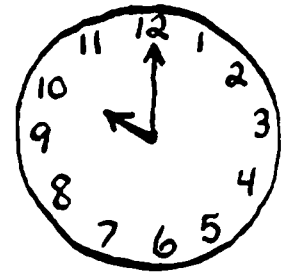
2 o'clock



8 o'clock



6 o'clock



10 o'clock

The long hand that tells how many MINUTES after or before an HOUR moves much faster than the short hand. While the short HOUR telling hand moves from one number to the next one, the long MINUTE telling hand goes all the way around the whole clock face from 12 back to 12 again.

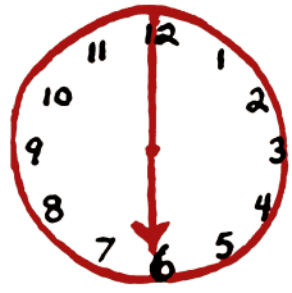
It takes the long hand 60 MINUTES to do that

because

1 HOUR is the same length of time as 60 MINUTES.

If you count by 5 to 60 you will see that you say 12 numbers.

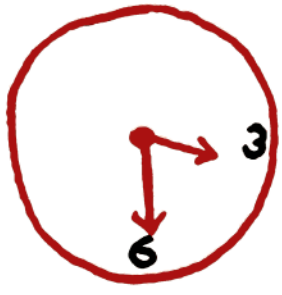
Suppose our clock's face were made into halves



When the long MINUTE hand came down to the 6 it would have gone

HALF WAY

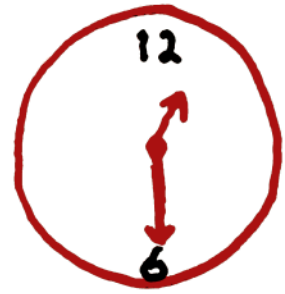
around the clock and then it would be HALF PAST whatever HOUR the little HOUR hand had been pointing near.



HALF PAST THREE

HALF PAST TEN

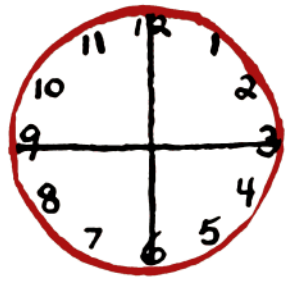
HALF PAST SIX



HALF PAST TWELVE

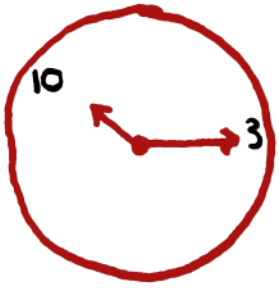
If we made QUARTERS or FOURTHS
on our clock's face—

The long hand at 9 would mean it was a QUARTER TO or BEFORE the HOUR.

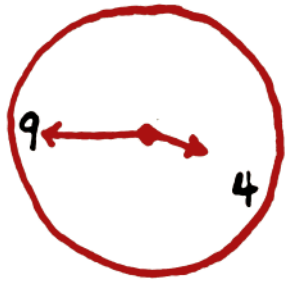


The long hand at 3 would mean it was a QUARTER AFTER the HOUR.

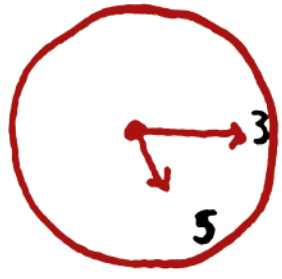
HERE ARE SOME TIMES



QUARTER AFTER TEN



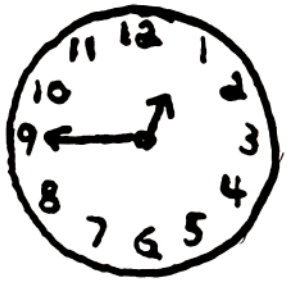
QUARTER TO FOUR

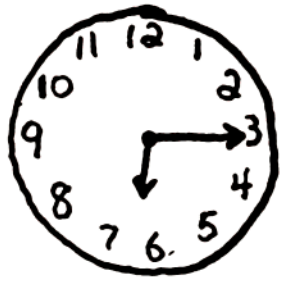


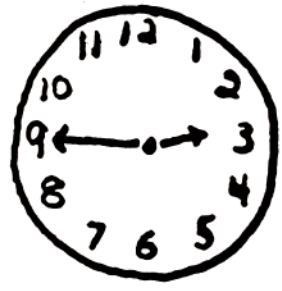
QUARTER AFTER FIVE

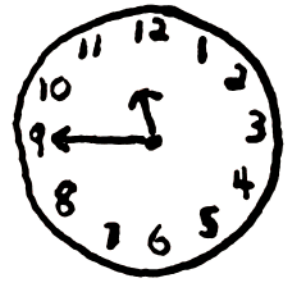
QUARTER TO ELEVEN

WHAT TIME IS IT ON THESE?









These two pages are called

ZERO'S CLASS

because the ADDING and SUBTRACTING

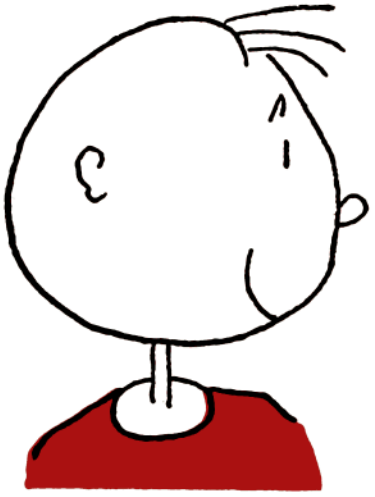
use numbers that are sometimes

more than

10

	0 +7 7	0 +8 8	0 +9 9	1 +6 7	1 +7 8	1 +8 9	1 +9 10
2 +5 7	2 +6 8	2 +7 9	2 +8 10	2 +9 11	3 +4 7	3 +5 8	3 +6 9
3 +7 10	3 +8 11	3 +9 12	4 +4 8	4 +5 9	4 +6 10	4 +7 11	4 +8 12
4 +9 13	5 +5 10	5 +6 11	5 +7 12	5 +8 13	5 +9 14	6 +6 12	6 +7 13
6 +8 14	6 +9 15	7 +7 14	7 +8 15	7 +9 16	8 +8 16	8 +9 17	9 +9 18

7 −0 7	8 −0 8	9 −0 9	8 −1 7	9 −1 8	10 −1 9	9 −2 7	10 −2 8
11 −2 9	10 −3 7	11 −3 8	12 −3 9	10 −4 6	11 −4 7	12 −4 8	13 −4 9
10 −5 5	11 −5 6	12 −5 7	13 −5 8	14 −5 9	10 −6 4	11 −6 5	12 −6 6
13 −6 7	14 −6 8	15 −6 9					
		7 −7 0	8 −7 1	9 −7 2	10 −7 3	11 −7 4	12 −7 5
13 −7 6	14 −7 7	15 −7 8	16 −7 9	8 −8 0	9 −8 1	10 −8 2	11 −8 3
12 −8 4	13 −8 5	14 −8 6	15 −8 7	16 −8 8	17 −8 9	9 −9 0	10 −9 1
11 −9 2	12 −9 3	13 −9 4	14 −9 5	15 −9 6	16 −9 7	17 −9 8	18 −9 9



If you know everything

that is in this

book

You already know more than

all the grown-up men

and women in the world

knew for

THOUSANDS AND THOUSANDS OF YEARS

THE END